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Group Art Unit 3741

Appl. No.	:	10/730,747
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Applicant	:	Robert M. Koehl
Filed	:	December 8, 2003
Title	:	PUMP CONTROL SYSTEM AND METHOD
Examiner	:	Vikansha S. Dwivedi
Docket No.	:	105196.012000

I, Ellen R. Webb, hereby certify that this correspondence is being transmitted electronically to the United States Patent and Trademark Office via the EFS web e-Filing system on the date of my signature.

Ellen R. Webb
Signature

November 18, 2009
Date of Signature

REPLY BRIEF

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Dear Sir:

Appellant hereby submits this Reply Brief to the Examiner's Answer of September 18, 2009.

This Reply Brief is being filed electronically via EFS-Web.

The Commissioner is hereby authorized to charge any fee deficiency to deposit account number 50-2638 in the name of Greenberg Traurig.

REMARKS

In accordance with 37 CFR §§ 41.41(a)(1) and 41.43(b), Appellant hereby submits this Reply Brief in response to the Examiner's Answer.

The Examiner's Answer has been carefully reviewed and it is respectfully submitted that the Examiner continues to fail to present the evidence required to support a *prima facie* case of obviousness. For this reason it is respectfully submitted that the rejection of the claims must be withdrawn.

As set forth in the Appellant's Appeal Brief, independent Claim 28 is directed toward a method of operating a motor of a pump for use with a pool and/or spa by determining whether an AC line current is greater than a programmed threshold due to a foreign object obstruction. Independent Claim 87 is directed toward a method of operating a motor of a pump for use with a pool and/or a spa by determining if a parameter (such as actual pressure, bus current, bus voltage, line current, heat sink temperature, and motor speed) is outside of a range of programmed thresholds due to a foreign object obstruction.

On pages 5 and 6 of the Examiner's Answer, the Examiner asserts that Markuson provides "the teaching for finally, shutting down the motor following limp mode." However, the Examiner fails to counter the Appellant's arguments that Markuson teaches that a human being must actually shut down the motor after an overload condition is detected otherwise the motor will break down. Specifically, when the controller 10 of Markuson detects an overload condition, the controller 10 merely switches an appropriate indicator light on and starts a timer. Markuson teaches that service personnel must then manually react to the indicator light before the pump becomes stuck and the motor breaks down. *Markuson*, Abstract; col. 4, lines 4-7; col. 5, lines 3-11; col. 5, lines 33-53; col. 6, lines 37-41; col. 6, line 59 to col. 7, line 44.

Markuson does not teach or suggest reducing the output voltage to the pump motor 2 or reducing the operating frequency of the pump motor 2 when the controller 10 detects an overload condition in order to drive the motor in a limp mode. Rather, Markuson teaches that a human

being must see an indicator light and react before the pump gets stuck and the motor is "killed" (*i.e.*, breaks down).

On page 6 of the Examiner's Answer, the Examiner refers to Figure 2 of Markuson to teach limp mode conditions and the motor being turned off. However, the motor 2 of Markuson is not automatically turned off by the controller or automatically run in a limp mode. Markuson teaches that "power consumption can be seen to continue upward until position 29 [near position 30] where the pump stuck and the motor killed." *Markuson*, col. 5, lines 49-51. In that situation, the motor 2 was not automatically turned off, but rather, the motor 2 broke down. In addition, Markuson teaches the following regarding the real-time power graph of Figure 2:

> Location 26 of FIG. 2 shows when the oil well tubing was replaced, and position 27 shows that power consumption appears normal again. Many other problems can similarly be detected by noting when power consumption dips. Position 30 shows the detection of an underload condition which is corrected in position 31 by reducing the amount of iron sulfide in the pump.

Markuson, col. 6, lines 6-15.

At position 26 and position 31 (directly after position 30) on the real-time power graph of Figure 2, the motor 2 has been manually turned off by service personnel so that they can repair the pump. Also, power consumption only dips because of a problem with the pump, not because the controller 10 automatically reduces the power to the motor 2 in order to run the motor 2 in a limp mode.

It is thus respectfully submitted that Markuson does not provide the teaching for "finally, shutting down the motor following limp mode" nor does Markuson teach or suggest at least the claimed elements of automatically reducing an output voltage or operating frequency to run the motor in a limp mode and automatically shutting down the motor within 30 seconds if the pump motor does not operate within operational limits while being driven in the limp mode, as has been asserted and relied upon in the rejections of Claims 28 and 87.

Struthers does not cure the deficiencies of Markuson. As discussed previously in the Appellant's Appeal Brief, Struthers ultimately only teaches taking at least five minutes to shut down the motor 12 when an unacceptably high torque is detected. In contrast, the subject matter of Claims 28 and 87 results in the motor being shut down within 30 seconds in order to help prevent bodily harm as a result of a foreign object obstruction in a pool or spa system.

It has been asserted that McDonough teaches a pump for use within a spa and that the pump is immediately shut off when obstructed, which has been asserted as being within 30 seconds. However, while McDonough does generally teach a spa pump, McDonough does not cure the deficiencies of Markuson and Struthers. Rather, McDonough effectively teaches away from the claimed subject matter of Claims 28 and 87 by teaching to immediately and automatically shut down the motor without first reducing an output voltage or operating frequency to run the motor of the pump 20 in a limp mode. In contrast, the subject matter of Claims 28 and 87 results in the motor being shut down within 30 seconds if the motor of the pump 20 does not operate within operational limits while being driven in the limp mode in order to help prevent frequent, and often false, shutdowns of the motor.

In summary, while independent Claim 28 specifies shutting down the motor within 30 seconds if the motor does not operate within operational limits at a reduced voltage or frequency, Markuson teaches a system in which the motor continues to run in a normal mode and service personnel must attend to it before it breaks down. Struthers teaches a system in which the motor is run at multiple speeds (including a reduced speed, an increased speed, and backward-forward jogs) and then is finally shut down only after five minutes has elapsed. Conversely, McDonough teaches a system in which the motor is immediately shut off rather than first being run at a reduced voltage or frequency.

Similarly, while independent Claim 87 is directed to first executing an automatic recovery operation and then shutting down the motor within 30 seconds if the recovery operation fails, Markuson teaches a system in which the motor continues to run in a normal mode and service personnel must attend to it before it breaks down. Struthers teaches a system in which the motor is run at multiple speeds (including a reduced speed, an increased speed, and

backward-forward jogs) and then is finally shut down only after five minutes has elapsed. Conversely, McDonough teaches a system in which the motor is immediately shut off rather than first executing an automatic recovery operation.

In light of the arguments set forth above, none of Markuson, Struthers, or McDonough teaches or suggests "automatically shutting down the motor within up to about 30 seconds in the motor does not operate within operation limits while being driven in the limp mode and the foreign object obstruction cannot be cleared," as specified by Claim 28, or "executing an automatic recovery operation if the parameter is outside of the range of programmed thresholds in an attempt to clear the foreign object obstruction" and "automatically shutting down the motor within up to about 30 seconds if the recovery operation fails and the foreign object obstruction cannot be cleared," as specified by Claim 87.

Accordingly, it is respectfully submitted that the combination of Markuson, Struthers, and McDonough cannot be said to teach each and every element claimed as is required of a *prima facie* case of obviousness. For at least this reason, it is respectfully submitted that the rejections of Claims 28 and 87 under 35 U.S.C. § 103 based upon Markuson in view of Struthers and McDonough must be withdrawn.

CONCLUSION

For at least the reasons set forth above, it is respectfully submitted that the subject application stands in condition for allowance.

Respectfully Submitted;

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